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Article *in* Psychiatry Research · December 2014

DOI: 10.1016/j.psychres.2014.07.032

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Can the therapeutic relationship predict 18 month outcomes for individuals with psychosis?

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ARTICLE INFO

Article history:
Received 1 October 2013
Received in revised form
14 July 2014
Accepted 16 July 2014

Keywords:
Schizophrenia
Therapeutic relationship
Outcome

ABSTRACT

Therapeutic relationships (TRs) are considered a key component of good psychiatric care, yet its association with outcomes for individuals with psychosis remains unclear. Five hundred and sixty-nine service users with psychotic disorders and care coordinators in community settings rated their therapeutic relationship; outcomes were assessed 18 months later. In multivariate analyses, a small but significant association was found between service user ratings and instances of psychiatric hospital admissions, self harm and suicide attempts over an 18 month period. Care coordinator ratings were associated with instances of psychiatric hospital admissions and harm to others over the 18 months and level of functioning at 18 months. The differential findings and small effect size suggests that the therapeutic relationship needs further definition for this patient group in this setting. Nevertheless, clinicians should prioritise interactions that strengthen therapeutic relationships.

1. Introduction

Despite advances in our understanding of the aetiology of schizophrenia and related disorders, overall outcomes for this patient group remain poor (Andrew et al., 2012; Bracken et al., 2012; The Schizophrenia Commission, 2012). The recent Schizophrenia Commission (The Schizophrenia Commission, 2012) in the UK presented several reasons for such poor outcomes, including inadequate funding for services, but highlighted the importance of the relationship between clinicians and patients as a vehicle for change, in particular by engendering hope for the future. The importance of the therapeutic relationship (TR) has face validity, and is cited in clinical guidelines and by service users as the cornerstone of psychiatric care (Fox, 2002; Johansson and Eklund, 2003; National Institute for Health and Clinical Excellence, 2009; Royal College of Psychiatrists, 2009). Several investigations have reported a link between the TR and outcomes in psychotherapy settings (Horvath and Symonds, 1991; Martin et al., 2000) however the current evidence for individuals with psychotic disorders, particularly in case management relationships, is unclear.

1.1. Defining the TR in case management relationships

When discussing the TR, a range of terms is used, often inconsistently. Most commonly, it is discussed as the 'therapeutic relationship', the 'therapeutic alliance' or 'working alliance'. However these terms have different etymologies, connotations and may in fact, be components of the same construct.

Alliance may be defined as a 'state of union or combination' or 'people united by kinship or friendship, kindred, friends or allies' (Simpson and Weiner, 1989). It is generally used to denote a sense of being united with another for a defined purpose and has a sense of equality, and being advantageous to all parties. Alliance implies a sense of agreement, but not necessarily an emotional connection such as being liked or trusted. In terms of community mental health services or case management relationships, alliance would imply a voluntary union, sought by both parties; something which is often not the case. In this context, 'therapeutic alliance' and 'working alliance' seem inappropriate for this setting.

Conversely, relationship is defined as 'the state of being related; a condition or character based upon this; kinship' or the '… particular way in which one thing is thought of in connection with another' (Simpson and Weiner, 1989). In this way, a relationship could be a passive connection between parties. It does not necessitate a conscious, purposeful connection nor does it imply a

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http://dx.doi.org/10.1016/j.psychres.2014.07.032

common cause or outcome. It may include notions of alliance (as described above) and positive or negative emotional connections (e.g., trust or distrust). In mental health services, the term may therefore more adequately describe the connection between a service user and a service provider, in particular when it is one that is not voluntarily sought.

Therapeutic is defined as 'of or pertaining to the healing of disease' or 'to minister to, treat medically' (Simpson and Weiner, 1989). Therefore, therapeutic relationship could denote a union with a defined endpoint of curing mental illness or an interaction that is defined around treatment (without reference to the endpoint). In this paper, the latter sense will be used. That is, rather than suggesting a curative function, the term 'Therapeutic Relationship' will be used to describe a connection and interaction between service users and clinicians that is defined through treatment.

There is additional conceptual confusion (Hatcher and Barneds, 2006) about the term which has led some authors (Priebe and McCabe, 2008) to make a distinction between 'interaction' and the 'relationship'. An interaction is an objective and observable behavioural exchange between individuals. The relationship is a psychological construct held by both individuals regarding the interaction and the other individual – it may therefore be seen as an appraisal.

In summary the term 'Therapeutic Relationship' (TR) will be used in this paper to denote 'an appraisal of the connection and interaction between service users and clinicians that is defined through the delivery of mental health treatment' (Priebe and McCabe, 2008).

1.2. Therapeutic relationships in case management for psychosis

While the evidence for a link between TRs and outcomes is well established in psychotherapy settings (Horvath and Symonds, 1991; Martin et al., 2000), there are relatively equivocal findings in case management relationships for psychosis (Priebe et al., 2011). We found four studies that examined longitudinal associations between the TR and subsequent hospitalisation. Two studies (Priebe and Gruyters, 1993; Fakhoury et al., 2007) using clinician ratings and service user ratings respectively, and found a significant positive association. However, two further studies that used clinician ratings found no association (Olfson et al., 1999; Clarke et al., 2000). Likewise, longitudinal examinations of the link between the TR and subsequent functioning have been inconsistent (Priebe and Gruyters, 1993; Goering et al., 1997; Chinman et al., 2000; Clarke et al., 2000; Catty et al., 2010) Clinician ratings in these studies, in particular vocational workers, often showed a positive relationship to functioning outcomes, however service user ratings were not associated with outcomes. The most consistent evidence is for a positive relationship between both clinicians and service users' ratings and subsequent medication adherence (Olfson et al., 2000; Holzinger et al., 2002; Weiss et al., 2002). We were unable to find any studies examining a broader definition of engagement (e.g., attendance at appointments) as an outcome, however cross-sectional studies (or those with therapeutic relationships as the outcome) suggest that stronger clinician-rated TRs are associated with improved help seeking and treatment adherence, but service user ratings are not (Corriss et al., 1999; Calsyn et al., 2006). Additionally, we found no studies linking the TR to subsequent harm to self or others. More recently, there has been some evidence for a cross-sectional positive association between perceived coercion and service user ratings of the TR (Angell et al., 2007; Sheehan and Burns, 2011). Our own unpublished investigation (first author's PhD) in the same dataset found cross sectional associations between: poorer service user ratings of the TR and higher number of hospital admissions in the previous two years, higher perceived coercion and more instances of self harm, but no association with level of functioning and engagement in treatment. In this data set poorer care coordinator ratings of the TR were associated with poorer service user functioning and engagement. In both analyses, rates of harm to others and suicide were not entered into the final analysis model due to the p value not meeting a predetermined threshold ($p < 0.20$).

One possible explanation for the lack of consistent evidence is the methodology of published studies. A recent systematic review (Priebe et al., 2011) found some evidence for a small association for individuals with psychotic disorders but concluded that research was undermined by methodological issues, in particular by poorly operationalised measures of the TR and small sample sizes. Further, the differential associations with outcomes when considering the rater of the relationship outlined above adds further difficulty in assessing the literature. Another factor is measurement of TRs used in studies of relationships in case management for psychosis. In their meta-analysis of psychotherapy literature, Horvath and Symonds (1991) suggest that different measures had a differential effect, yet the Martin et al., 2000 repeat of this review did not support this finding. In a study of the conceptual bases of common measures of TR, Catty et al., 2007 suggest that the measures found in the case management literature define TRs in different ways. The Working Alliance Inventory (WAI) (Horvath and Greenberg, 1989), for example, uses Bordin's Pan theoretical definition of TRs (Bordin, 1979), whereas the Helping Alliance Scale (Priebe and Gruyters, 1993) appears to assess a more Rogerian definition of unconditional positive regard and empathy. In this context, studies using different measures of TRs may be assessing different constructs, which may in turn, provide some explanation for the equivocal nature of the findings to date in investigations of the TR in case management for psychosis.

This study aims to resolve this uncertainty by examining the utility of ratings of the therapeutic relationship between service users with a diagnosis of a psychotic disorder and their care co-ordinator, measured at baseline, in predicting a range of outcomes at 18 months whilst controlling for potential confounding variables. Our hypotheses are based, where possible, on existing literature and an exploratory analysis of associations between therapeutic relationships and variables conducted as part of the first author's PhD. The specific hypotheses tested were:

1. A weaker service user-rated therapeutic relationship at baseline would predict:
   - 1.1. being admitted (voluntarily or involuntarily) to a psychiatric hospital during the follow-up period
   - 1.2. more perceived coercion rated at the follow-up interview
   - 1.3. self-harm during the follow-up period
   - 1.4. suicide attempts during the follow-up period

   Service user rated therapeutic relationships would not predict:
   - 1.5. harm to others during the follow-up period
   - 1.6. engagement rated at the follow-up interview
   - 1.7. functioning rated at the follow-up interview
2. A weaker care coordinator-rated therapeutic relationship at baseline would predict:
   - 2.1. being admitted (voluntarily or involuntarily) to a psychiatric hospital during the follow-up period
   - 2.2. poorer engagement as rated at the follow-up interview
   - 2.3. poorer functioning as rated at the follow-up interview

   Care coordinated-rated therapeutic relationships would not predict:
   - 2.4 harm to self/others or suicide attempts during the follow-up period
   - 2.5 perceived coercion.

Please cite this article as: Farrelly, S., et al., Can the therapeutic relationship predict 18 month outcomes for individuals with psychosis? Psychiatry Research (2014), http://dx.doi.org/10.1016/j.psychres.2014.07.032

Rates of suicide attempts and harm to others were treated as exploratory analyses as they did not meet threshold for inclusion in the unpublished analyses. We hypothesised that rates of suicide attempts might be indicative of similar processes to self harm and thus hypothesised an association with TRs.

2. Method

This is a secondary analysis of data collected during the CRIMSON trial (Thornicroft et al., 2010, 2013). Participants were recruited from community mental health teams in four mental health trusts in England. Eligibility criteria were: a relapsing psychotic illness; aged over 16; at least one psychiatric admission in the previous two years; and complex care needs. We did not invite those who were hospitalised to reduce perceived pressure to participate. No further exclusions were made. The trial tested whether the Joint Crisis Plan intervention (in addition to treatment as usual) was effective in reducing the proportion of involuntary hospitalisations when compared to a treatment as usual alone. Treatment as usual in this context was a form of case management under the Care Programme Approach (Department of Health, 1991, 2000). Under this model service users are assigned a 'care coordinator' who is responsible for delivery and coordination of mental health treatment and social care. A service users' care coordinator would be the clinician with whom they have the most frequent contact. The frequency of contact would differ depending on the needs of the service user but could range from daily in the context of a relapse to quarterly where the service user is relatively stable. Care coordinators come from a variety of professional groups including community psychiatric nurses, occupational therapists, social workers and occasionally psychiatrists (when the social care needs are less complex). Tasks of a care coordinator could include care planning, mental and physical health monitoring, medication oversight, and assistance with housing, benefits, employment and self care (Department of Health, 1999) The trial received ethical approval by the King's College Hospital Research Ethics Committee (07_H0808_174).

This study aimed to examine whether the quality of the relationship between a care coordinator and a service user (i.e., treatment as usual under the Care Programme Approach) can predict subsequent outcomes.

2.1. Data collection

Participants and their care coordinators were interviewed at baseline entry to the trial and followed-up 18 months later. Clinical case notes were reviewed at both time points with service users' permission. The interview at both time points contained a set of measures of the participants' treatment experience. The measures relevant to the current study are as follows:

Therapeutic relationships. TRs were assessed by the short form (Tracey and Kokotovic, 1989) Working Alliance Inventory (WAI) (Horvath and Greenberg, 1989) adapted for use in community settings (Neale and Rosenheck, 1995). This modified version of the WAI has very good psychometric properties (Ferron, 2008). Both the service user (WAI-SU) and care coordinator (WAI-CC) versions of the WAI were used. Higher scores on the WAI are indicative of weaker TRs.

Psychiatric hospitalisations. Informal and formal hospitalisations during the 18 month follow-up period were collected from participants' psychiatric medical records.

Perceived coercion. Service users' rating of perceived coercion at the follow-up interview was measured by service user-rated MacArthur Admission Experience Scale (adapted for use in outpatient treatment (Lidz et al., 1995). Higher scores indicate more perceived coercion.

Engagement: Aspects of 'availability', 'collaboration', 'help seeking' and 'treatment adherence' were measured by the care coordinator-rated Service Engagement Scale at the follow-up interview (Tait et al., 2002). Higher total scores on this measure indicate poorer engagement.

Overall functioning at the follow-up interview was measured by researcher-rated Global Assessment of Functioning (GAF). At follow-up, GAF ratings were made before the researchers were unmasked to trial treatment allocation.

Harm to self or others. Experience of self-harm, harm to others or suicide attempts (yes/no for all three measures) during the follow-up period were collected from service users during interview and confirmed with the care coordinator and medical records.

2.2. Data analysis

The dependent variable in each model was the relevant outcome. Using linear or logistic regression as appropriate, WAI ratings were entered into the model after adjusting for trial site and the baseline value of the outcome. To adjust for possible confounding, secondary analyses adjusted for associations with WAI ratings found in unpublished analyses (Farrelly, 2013, unpublished PhD thesis). Specific associations with care coordinator WAI ratings were care coordinator age group and service user ethnicity. Associations for service user ratings were service user and care coordinator ethnicity, ethnic matching, service user age group, level of qualification and diagnosis. Furthermore, as this was a secondary analysis of the CRIMSON trial, but was not interested in the effect of intervention, Trial arm was controlled for in all analyses. For the purposes of transparency, unadjusted analyses are also provided.

To examine the influence the quality of the TR, in post hoc analyses we examined the difference in outcomes for those with very high, i.e., weakest (upper quartile) or very low i.e., strongest (lower quartile) ratings on the TR using univariate tests of chi-square or Mann-Whitney u where appropriate.

3. Results

3.1. Sample characteristics

Five hundred and sixty-nine service users participated. Participants had an average age of 39 years, 50% were male, 62% were of white ethnicity, 74% had a diagnosis of schizophrenia spectrum disorder and 26% had an affective disorder with psychotic features. In the two years prior to baseline assessment, all had been admitted to a psychiatric ward at least once, and 31% had been admitted more than once.

At baseline, 534 care coordinators provided responses to the demographic questionnaire. Care coordinators had an average age of 42 years and had an average 144 months of professional practice. 62% were community psychiatric nurses, 31% were social workers and 7% were 'other' including psychiatrists and occupational therapists. The average length of relationship with service users at baseline was 22 months.

3.1.1. Predicting outcome at follow-up with baseline service user ratings on the WAI

Poorer baseline values (i.e., higher scores) on WAI-SU were predictive of whether service users: were admitted to a psychiatric hospital (involuntarily or voluntarily); harmed themselves; or made suicide attempts over the follow-up period (see Table 1). These findings were sustained after adjustments.

To aid interpretation, two further analyses were conducted: firstly, differences in TR scores for binary outcomes and comparisons of outcomes for the strongest and weakest TRs. Differences in TR scores for binary outcomes were as follows: involuntary admission (mean difference = 2.4, $p = 0.006$), voluntary admission (mean difference = 1.6, $p = 0.13$), self-harm (mean difference = 3.62, $p = 0.01$), suicide (mean difference = 2.1, $p = 0.22$) and harm to others (mean difference = 1.3, $p = 0.45$).

Comparisons of weakest (scores of greater than 19) and strongest (scores of less than 11) service user ratings of TR showed significant differences rates of involuntary admissions, self-harm, and means scores of perceived coercion (see Table 2). For example, 17% of those with the strongest TR were involuntarily admitted over the follow-up period compared to 29.5% of those with the weakest ratings ($p = 0.015$).

3.1.2. Predicting outcome at follow-up with baseline care coordinator ratings on the WAI

Poorer TRs at baseline, as rated by the care coordinator, were associated with the service user being admitted to a psychiatric hospital (voluntarily and involuntarily) and incidences of harm to others over the follow-up period. Additionally, poorer alliances were predictive of poorer overall functioning over the follow-up period (see Table 3). These findings were sustained after adjustments.

Differences in mean scores for binary outcomes were as follows: involuntary admission (mean difference = 2, $p = 0.009$), voluntary admission (mean difference = 1.5, $p = 0.03$), self-harm (mean difference = 1.2, $p = 0.09$), suicide (mean difference = 1.3, $p = 0.088$) and harm to others (mean difference = 3.2, $p = 0.014$).

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Table 1
Predictive utility of baseline WAI-SU.

Outcome	N	Coefficient/Odds ratio of WAI-SU	P	95% Confidence intervals	
Involuntary admission to psychiatric hospital (1)	543	1.04[a]	**0.007**	1.01	1.09
Involuntary admission to psychiatric hospital (2)	492	1.02[a]	**0.017**	0.98	1.07
Unadjusted	*544*	*1.05*[a]	***0.001***	*1.02*	*1.08*
Admitted to a psychiatric hospital (1)	544	1.03[a]	**0.030**	1.00	1.06
Admitted to a psychiatric hospital (2)	492	1.02[a]	**0.014**	0.98	1.05
Unadjusted	*544*	*1.03*[a]	***0.009***	*1.00*	*1.06*
Engagement (1)	360	0.01	0.876	−0.09	0.11
Engagement (2)	346	0.015	0.764	−0.088	0.12
Unadjusted	*427*	*0.077*	*0.124*	*−0.021*	*0.176*
Perceived Coercion (1)	422	0.019	0.089	−0.002	0.041
Perceived Coercion (2)	384	0.010	0.381	−0.013	0.035
Unadjusted	*456*	*0.048*	***0.000***	*0.024*	*0.072*
Self-harm (1)	501	1.07[a]	**0.013**	1.01	1.13
Self-harm (2)	455	1.04[a]	**0.009**	0.96	1.12
Unadjusted	*501*	*1.08*[a]	***0.001***	*1.03*	*1.13*
Suicide attempts (1)	501	1.05[a]	**0.049**	1.00	1.10
Suicide attempts (2)	455	1.06[a]	**0.015**	0.99	1.13
Unadjusted	*502*	*1.04*[a]	***0.042***	*1.00*	*1.09*
Harm to others (1)	501	1.02[a]	0.490	0.962	1.08
Harm to others (2)	455	0.98[a]	0.636	0.89	1.07
Unadjusted	*502*	1.02[a]	*0.343*	*0.97*	*1.09*
Functioning (1)	501	−0.014	0.834	−0.144	0.117
Functioning (2)	411	0.011	0.889	−0.14	0.170
Unadjusted	*501*	*−0.159*	***0.049***	*−0.318*	*−0.000*

(1) Adjusting for site, baseline values on outcome and Trial Arm.
(2) Adjusting for site, baseline values on outcome and Trial Arm, and predictors of WAI-SU (service user and care coordinator ethnicity, ethnic matching, service user education level, diagnostic group) taken from Farrelly (2013, unpublished PhD analyses).

[a] Results of logistic regression. Figures are Odds Ratios.

Table 2
Outcomes by 'best' and 'worst' service user rated TR.

Outcome	Strongest TR N=127	Weakest TR N=113	Test statistic	p value
Involuntary admission to psychiatric hospital (n, %)	**23(17%)**	**36(29.5%)**	χ^2=**5.93**	**0.015**
Admitted to a psychiatric hospital (n, %)	38(28%)	46(38%)	χ^2=2.93	0.087
Self-harm (n, %)	**6(5%)**	**16(14%)**	χ^2=**6.39**	**0.011**
Suicide attempts (n, %)	10(1%)	14(1.2%)	χ^2=1.35	0.244
Harm to others (n, %)	6(5%)	9(8%)	χ^2=1.07	0.301
Engagement (mean (S.D.))	9.01(7.2)	10.5(7.2)	z= −1.53	0.126
Perceived coercion (mean (S.D.))	**1.98(1.66)**	**2.75(1.72)**	**Z= −3.27**	**0.001**
Functioning (mean (S.D.))	**47(12.3)**	**44(12.7)**	**Z=2.00**	**0.04**

Abbreviations: χ^2: Pearson's squared test; S.D.: standard deviation; z=Mann–Whitney U z score

Comparisons of the weakest (scores of greater than 20) and strongest (scores of less than 14) care coordinator ratings on the TR indicate significant differences in outcomes in rates of involuntary psychiatric hospital admissions, harm to others, and scores on measures of engagement and functioning (see Table 4). For example, those with the strongest alliances at baseline had moderate symptoms/difficulty in social, occupational function (i.e., mean GAF scores of 51) compared to those with the weakest alliances who had serious symptoms /impairment in social occupational functioning (i.e., mean GAF scores of 42). Further, 11% of those with the weakest TRs as rated by care coordinators harmed someone (other than themselves) during the follow-up period, compared to only 1% in the group with the strongest relationships.

4. Discussion

This study aimed to establish the utility of ratings of the TR in predicting outcome over an 18 month follow-up period. The analyses supported several hypotheses: poorer service user-rated TR at baseline was predictive of being admitted to a psychiatric hospital (both voluntarily and involuntarily), having experience of self-harm and suicide attempts over the subsequent 18 months. Similarly, care coordinator ratings of the TR were predictive of a number of outcomes at 18 months but the effect sizes were small. While the findings were (in the main) highly statistically significant, the effect sizes including the overall sample were small indicating limited predictive utility. However, examination of those with the strongest versus weakest alliances had potentially more predictive utility.

A recent systematic review (Priebe et al., 2011) of the TR for individuals with psychotic disorders found some evidence of a predictive effect for hospitalisation, symptoms and functioning in the expected direction – i.e., stronger relationships lead to better outcomes. The analysis in this paper provides further support for this association. In particular, we found that a stronger TR as rated by both service users and their care coordinators was predictive of psychiatric hospital admissions (both voluntary and involuntary admissions) findings that were sustained after adjustments for potential confounders. Comparisons of the strongest and weakest TRs illustrated the effect for involuntary admissions, with over one quarter of those with the weakest TRs as rated by both parties were subsequently admitted over an 18 month period, compared with between 11–17% of those with the strongest relationships.

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Table 3
Predictive utility of baseline WAI-CC.

Outcome	N	Coefficient/Odds ratio of WAI-CC	P	95% Confidence intervals	
Involuntary admission to psychiatric hospital (1)	509	1.07[a]	**0.003**	1.02	1.12
Involuntary admission to psychiatric hospital (2)	431	1.10[a]	**0.000**	1.05	1.16
Unadjusted	509	1.08[a]	**0.000**	1.03	1.13
Admitted to a psychiatric hospital (1)	509	1.06[a]	**0.002**	1.022	1.106
Admitted to a psychiatric hospital (2)	431	1.07[a]	**0.004**	1.02	1.11
Unadjusted	509	1.06[a]	**0.002**	1.02	1.10
Engagement (1)	362	0.12	0.139	−0.039	0.281
Engagement (2)	304	0.15	0.103	−0.031	0.334
Unadjusted	403	0.49	**0.000**	0.361	0.623
Perceived Coercion (1)	392	0.02	0.094	−0.004	0.057
Perceived Coercion (2)	316	−0.02	0.774	−0.134	0.100
Unadjusted	426	0.03	0.110	−0.006	0.060
Self-harm (1)	470	1.04[a]	0.349	0.96	1.12
Self-harm (2)	400	1.03[a]	0.438	0.95	1.12
Unadjusted	470	1.05[a]	0.156	0.98	1.12
Suicide attempts (1)	470	1.06[a]	0.088	0.99	1.14
Suicide attempts (2)	400	1.06[a]	0.137	0.98	1.14
Unadjusted	471	1.05[a]	0.123	0.98	1.12
Harm to others (1)	469	1.14[a]	**0.003**	1.04	1.24
Harm to others (2)	400	1.10[a]	**0.045**	1.00	1.21
Unadjusted	471	1.13[a]	**0.003**	1.04	1.22
Functioning (1)	470	−0.28	**0.005**	−0.475	−0.085
Functioning (2)	400	−0.28	**0.009**	−0.502	−0.071
Unadjusted	470	−0.62	**0.000**	−0.872	−0.365

(1) Adjusting for site, baseline values on outcome and Trial Arm.
(2) Adjusting for site, baseline values on outcome and predictors of WAI-CC (care coordinator age group, service user ethnicity) taken from Farrelly (2013, unpublished PhD analyses).

[a] Results of logistic regression. Figures are Odds Ratios.

Table 4
Outcomes by 'best' and 'worst' care coordinator rated TR.

Outcome	Strongest TR N=115	Weakest TRN=164	Test statistic	p value
Involuntary admission to psychiatric hospital (n, %)	**13(11%)**	**39(25%)**	χ^2=**7.40**	**0.007**
Admitted to a psychiatric hospital (n, %)	27(23%)	53(32%)	χ^2=2.96	0.085
Self-harm (n, %)	4(3%)	14(8.5%)	χ^2=3.25	0.071
Suicide attempts (n, %)	6(5%)	17(10%)	χ^2=2.85	0.091
Harm to others (n, %)	**1(0.8%)**	**11(7%)**	χ^2=**6.08**	**0.014**
Engagement (mean (S.D.))	**6.45(5.78)**	**12.41(7.54)**	***Z***= **−5.707**	**0.000**
Perceived Coercion (mean (S.D.))	1.98(1.77)	2.34(1.67)	*Z*= −1.704	0.088
Functioning (mean (S.D.))	**51(15.9)**	**42(10.7)**	***Z***=**3.585**	**0.000**

Abbreviations: χ^2: Pearson's squared test; S.D.: standard deviation; *z*=Mann–Whitney *U z* score.

As predicted, we found that service user ratings (but not care coordinator's) of the TR were related to instances of self-harm and suicide attempts over the subsequent follow-up period. We found no published literature which has previously examined this association for individuals with psychosis. As self-harm is often associated with personality disorder, and comorbid diagnoses were not a reason for exclusion in the trial, it is possible that service user ratings may have been affected by such traits (Langley and Klopper, 2005). This would be an interesting avenue for further research.

Contrary to previous literature (Angell et al., 2007; Sheehan and Burns, 2011) we found that service user ratings were not associated in multivariate analyses with their ratings of perceived coercion at 18 month follow-up. Univariate analyses comparing weakest and strongest TRs did show an effect. These findings may suggest that these two measures are related and that they represent a general appraisal process as controlling for variation in WAI ratings in the multivariate analyses lead to no effect of perceived coercion. Further, while needing replication, these analyses suggest some temporal aspects to ratings of perceived coercion and that associations may not be sustained over the medium term. There is some support for TR being a measure of general appraisal in theliterature (Reininghaus and Priebe, 2007) For example, some authors (e.g., Catty et al., 2010) have proposed that service user ratings of TRs correlate more with subjective measures of outcome.

As predicted and consistent with the literature (Priebe et al., 2011) baseline ratings of the TR from care coordinators (but not service users) did predict level of functioning at 18 months. Contrary to expectations, however care coordinator ratings were not associated with engagement outcomes at 18 months. The literature in this area shows a fairly consistent relationship with measures of medication adherence (Olfson et al., 2000; Holzinger et al., 2002; Weiss et al., 2002; McCabe et al., 2012), but few have used a broader definition of engagement such as that which is used in this study. Our findings suggest that engagement beyond medication adherence is a more complex process, and warrants further research for this patient group.

While many of the associations between baseline TR and subsequent outcomes are highly statistically significant, the effect sizes are small. One potential explanation for these somewhat equivocal findings is poor operationalisation of the TR in community or secondary settings (Howgego et al., 2003; McCabe and Priebe, 2004; Priebe et al., 2011). The concept of the TR originated from psychotherapy, which differs from secondary care settings in a number of ways (Priebe and McCabe, 2006). In psychotherapy

Please cite this article as: Farrelly, S., et al., Can the therapeutic relationship predict 18 month outcomes for individuals with psychosis? Psychiatry Research (2014), http://dx.doi.org/10.1016/j.psychres.2014.07.032

there is often consensus regarding the 'problem' and thus help-seeking. In contrast, mental health care in the community may not be voluntarily sought by service users. Additionally, rather than structured sessions in a therapist's office, services users in the community may be seen frequently in their homes, taken shopping, or observed taking medication, making professional/personal boundaries porous. Further, while there is often a primary contact, service users may interact with several members of a team, such as a nurse, vocational worker or psychiatrist and there is over regular turnover of these staff. In this context, measures defining a TR as a bond or agreement between individuals may miss an important aspect of service users' experience such as the sometimes involuntary nature of the relationship and multiple clinicians service users may have contact with. Finally, in addition to factors influencing the interactions between individuals, unique to community mental health are issues about public safety. Clinicians, especially so in England (Department of Health, 2007), are required to both 'care for' and 'control' service users on their caseload. This dual role is not addressed and may prevent true collaboration and co-working proposed by models from psychology (McCabe and Priebe, 2004). Therefore models and measures, such as the WAI used in this study, were developed in psychotherapy settings may not capture aspects of the TR that are unique to community mental health settings and may partially explain the limited relationship to outcomes.

This study builds on previous research in several ways. The large sample of individuals with psychotic disorders with limited exclusion criteria, increase the generalisability of these results. The focus on psychotic disorders, enables consideration of the TR for this diagnostic group without the confounding of other diagnoses; this is particularly important considering assertions that the TR for individuals with psychotic disorders is either difficult to develop or sustain, or is in some way different to other diagnostic groups (see Frank and Gunderson (1990), Gallop et al. (1993), Packer et al. (1994), and Bentall (2009)). By adjusting for possible confounders we were able to isolate the unique variation associated with WAI ratings – something that has not been done consistently in previous research. Finally, outcomes of harm to self and others have not been investigated previously. There are also limitations to these data. As a secondary analysis of trial data, the trial was not powered to detect outcomes associated with the WAI, although the large sample should mitigate this problem. Additionally, the WAI was originally developed in psychotherapy settings, and while adjusted for community settings, may not adequately capture the unique aspects of the relationship in community mental health settings. The length of relationship may be an important mediating factor in the impact of the TR on subsequent outcomes. We were unable to statistically adjust for this due to missing data. Further, outcomes of interest in previous research including vocational, symptoms, and medication adherence were not assessed in this study.

In summary, these findings suggest that while the TR in case management relationships is associated with outcomes for individuals diagnosed with a psychotic disorder, the effect is small. Further definition the therapeutic relationships taking account of the unique context of community mental health care is warranted.

Funding

This work was conducted as part of the CRIMSON trial. The CRIMSON trial was funded by the Medical Research Council, United Kingdom (Grant number G0601660). GT is funded in relation to a National Institute for Health Research (NIHR) Applied Programme grant awarded to the South London and Maudsley NHS Foundation Trust and in relation to the NIHR Specialist Mental Health Biomedical Research Centre at the Institute of Psychiatry, King's College London (Grant number PAXKAZD). MB is part-funded by the National Institute for Health Research (NIHR) through the Collaborations for Leadership in Applied Health Research and Care for Birmingham and Black Country (CLAHRC-BBC).

This report is independent research funded by the MRC and managed by the NIHR on behalf of the MRC-NIHR partnership. The views expressed in this publication are those of the authors and not necessarily those of the MRC, NHS, NIHR or the Department of Health.

Contributors

SF designed and conducted the study and prepared the first draft of the manuscript. All authors were involved in the design and conduct of the overall CRIMSON trial and contributed to and have approved the final manuscript.

Conflict of interest

The authors declare that they have no conflicts of interest.

Acknowledgments

We would like to thank the service users and clinicians who generously gave their time to participate in CRIMSON. We would also like to acknowledge Morven Leese and Clare Flach for their review of the statistical aspects of this paper. We would also like to thank the: JCP Facilitators: Melanie De Castro; Betina Reid; Rangeni Zinyama; Anita Davies; and the CRIMSON Research Assistants: Katie Selwood, Liz Doherty, Sam Treacy, Nicola Wright, Sarah Davis, Julia Cook, Gemma Clark, Catherine Finnecy, Gill Brown, Adrine Woodham.

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Please cite this article as: Farrelly, S., et al., Can the therapeutic relationship predict 18 month outcomes for individuals with psychosis? Psychiatry Research (2014), http://dx.doi.org/10.1016/j.psychres.2014.07.032